EVS

Exploring A Tree

KM-85

Teacher's Manual

Centre for Environment Education
Nehru Foundation for Development
Ahmedabad

SIKSHA MITRA
(Learning Centre)
Supported by : Swanirbhar

SIKSHA MITRA
(Learning Centre)
Supported by : Swanirbhar

SIKSHA MITRA
(Learning Centre)
Supported by : Swanirbhar

Sudeshna Sinha 25

Contents

1. **Dear teacher** 3

2. **Objectives** 4

3. **Background** 5
   Suitable Place
   Duration
   Some Hints
   Our Experiences
   Preparations

4. **Session I** 8
   Game 1
   Game 2
   Worksheet No.1

5. **Session II** 12
   Activity 1
   Activity 2
   Activity 3
   Activity 4

6. **Session III** 17
   Worksheet No.2

7. **Session IV** 20
   Game 3

8. **Extensions and Variations** 23
   Games
   Activities
   Alternative Worksheet No.1
   Alternative Worksheet No.2

SHIKSHA MITRA
EDUCATIONAL RESOURCE CE TRI
Supported by : SWANIRVAR
62B, ALIPORE ROAD.
KOLKATA-700 027.
PH : 2479 9271
E-MAIL:shiksi @ b CO IN

92

Acknowledgements

This project was coordinated by Ramesh Uttam, under the guidance of Dr. M. J. Ravindranath.

Project Learning Tree of the American Forest Institute Inc., Washington D.C. and Project Wild of the Western Regional Environmental Education Council, Boulder, Colorado, two innovative programmes in the US, have inspired the development of many of the ideas and activities presented in this manual.

We are grateful to Dr. Mala Chinoy, Ramesh Kothari, Jayshree Mehta, Anil Patel, Dr. C. J. Sanchorawala and Rajshree Sarbhai for having spared their valuable time and contributed to improving the contents of this module. For trying out the module and suggesting alternative methods for certain activities, special thanks are due to the Principal and Mr. S. H. Malek of Jamalpur Urdu Shala No. 9 and the Principal and Mrs. Jyotiben Trivedi of Republic High School, both of Ahmedabad. Thanks are also due to the Director and staff of Sundarvan for their help in the trial of the module. To the Hingolgadh Conservation Education Programme and World Wide Fund for Nature India's North Gujarat Branch, our thanks for providing the opportunity to try the materials under field conditions during their Nature Orientation Camps. Our deepest gratitude to the many students of the various schools with whom we enjoyed participating in the trials.

Kartikeya V. Sarabhai

The Project Team

Research and Development
Himani Desai
Santosh Kumar Gupta
Himanshu Joshi
Shailaja Joshi
E. K. Nareshwar
Gautam Patel
Mamata Pandya

Comment
Lavkumar Khacher
Vivek Khadpekar
Dhun Karkaria
Anil Patel
S. Ramkumar
Meena Raghunathan
Kartikeya V. Sarabhai

Editing
L. Balasubramanium
Nita Edwin
Anila Rao

Design
Hema Karkaria

Illustrations
Mukesh Acharya
Mukesh Barad
Shailesh Bhalani
Mukesh Panchal
Wilson Solanki
D. M. Thumber

D. T. P.
Balamani R. Menon

Artworks
Dhun Karkaria

Photographs
Manoj Dholakia
Dhun Karkaria
Hema Karkaria
Rajshree Sarabhai

Cover
Kailash Sankhla

Support Services
J. K. Nair
J. Krishnan Nair

Printing
Babu Jose

© 1993
Centre for Environment Education
Nehru Foundation for Development
Thaltej Tekra
Ahmedabad - 380 054

The material from this manual may be used for educational purposes provided due credits are given.

Second edition - 4000 copies.

Printed and published by
the Centre for Environment Education,
Thaltej Tekra, Ahmedabad. - 380 054

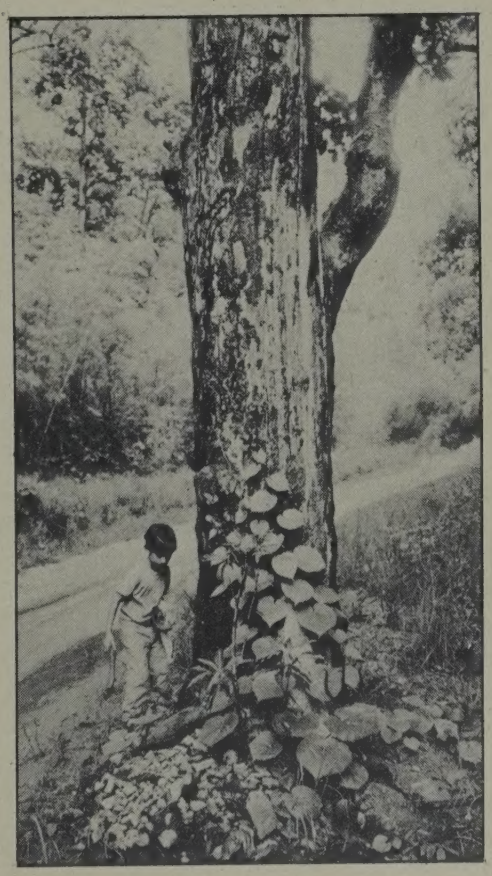
Distributed by
Edutech, Thaltej Tekra, Ahmedabad.- 380 054

Dear teacher,

In today's rapidly progressing world, we are well aware of the relevance and limitations of textbook and homework methods of learning. What is taught becomes effective only when it is properly coordinated with how it is taught. This programme is developed as an alternative approach to teaching, and aims at making both teaching and learning enjoyable and useful.

Emphasis is on the "How to" approach. This implies that importance is attached to the process of inquiry more than to merely getting the right answers. In these activities, the questions seldom bring forth straight, categorical answers but lead to more questions. These questions in turn open wider possibilities and draw the students' attention to the vibrant world that we all share.

"Exploring a Tree" is predominantly an outdoor, activity-based programme. The teacher's role here is that of a guide, who enables students to learn through participation, discovery and personal experience. The programme is a deliberate departure from the usual classroom method of teaching.



Nature games complement the activities to enhance students' perception and objectivity. We feel this helps in easier visualization and understanding of abstract concepts, and develops in students the ability to express themselves with greater confidence.

Please go through this manual carefully before conducting the suggested activities and games. We are sure you will find them as enjoyable and meaningful as we have found them to be while developing them through trials with students.

We look forward to your responses, both positive and negative, in terms of your overall perception of the programme and the relevance of the contents and approaches in achieving the objectives effectively. Suggestions for improvement, additions, extensions and variations are welcome.

Objectives

The objectives of the programme are :

1. To develop the skill of observing our surroundings using all our senses of perception. To explore what plants, insects, birds, etc. are found on a particular tree.

2. To create an awareness of how the tree is important to a variety of creatures living on and around it. To discover the relationship among living things which reveal their interdependence.

3. To enable the students to understand that a tree is an environment by itself, and also a part of a larger environment.

4. To understand the uses of trees.

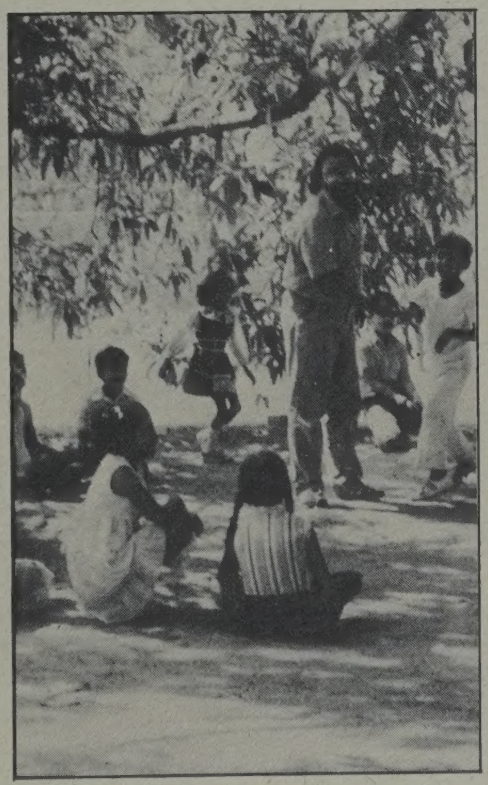
5. To generate an active interest in nature.

Background

1. Suitable Place

An activity-based programme is best conducted outdoors. City schools may have access to playgrounds and gardens while rural schools are generally closer to the natural environment. Even in the most crowded areas, it is rare not to have at least a few trees in the vicinity.

If the tree is nearby and can be easily visited, you could hold all the sessions outdoors. In case this is not possible, you could conduct some sessions in the class itself. For this programme, advantage should be taken of picnics and outdoor excursions organized by schools from time to time.



2. Duration

The activities of this programme have been planned in four sessions, each of 40 minutes duration. However, you can extend the time of each session or have a larger number of shorter sessions. Information presented in the chapter on `Extensions and Variations' will help you to innovate and add further sessions to make this a longer term project.

3. Some Hints

a) Explain the need for careful observation of both the familiar and unfamiliar surroundings. We often take the familiar for granted and overlook some of its interesting aspects. Exploring the unfamiliar is an adventure and this adventure can become meaningful if done in a systematic manner.

b) Too many activities or questions may prevent students from giving their best. To avoid this, you may divide the programme into smaller units so that attention is not lost. Sustained interest can be ensured by alternating the activities with observation and recording, collection, games, discussions, or taking measurements.

c) The programme may interrupt class schedules. So plan the session in such a way that students are able to work on the project over a set period of time. Also take the opportunity of picnics, excursions, camps, etc.

d) The duration of activities may not be sufficient to cover relevant portions of the syllabus. Hence make use of the flexibility of approach in this programme to condense or elaborate aspects desired.

e) You may not be in a position to devote enough time to all the activities, though they may be interesting. Therefore, arrange the activities in a sequence according to priority or importance.

4. Our Experiences

The tree programme was tried with students of standards V, VI and VII, at Sundarvan, Ahmedabad, The activities worked well with all these standards and the responses of students varied according to age group.

Our trials showed that students of standard V needed guidance in doing the activities. However, hints were given only when they were absolutely necessary. Problems were solved through discussions. The experience with standard VII students was very encouraging. They showed greater receptivity to the concepts presented and were enthusiastic in carrying out all the activities.

Most of the students initially found it difficult to realize that: (a) the project was not a test and marks were not being given, (b) they were the initiators and decision makers in the programme.

Dividing the class into small teams of eight students each, and asking each team to select a name for itself, like "Flowers", "Fruits", "Birds", "Squirrels", "Spiders", etc., makes each group cohesive and helps generate a friendly atmosphere. Each team should select a leader or spokesman who would record and report the team's observations.

The most crucial factor for the success of the programme is the direct involvement of the teacher. The extent to which the programme is understood, and the interest and enthusiasm with which it is handled, affect the outcome. The teacher's ability to do some of the activities with ease serve as an example and helps the students to follow the project.

5. Preparations

Select a site which has open spaces interspersed with trees so that students can move about freely and observe. If such a site cannot be found, select an area where there is a tree. A visit to the site before the actual sessions will facilitate smoother working.

Make sure that the time taken to reach the

site is less than the time the project would take to do, unless it is part of a picnic or excursion. Easy accessibility is preferable so that frequent visits are possible and students arrive at the site fresh and full of enthusiasm. While selecting the site also keep in mind the activities suggested as Extensions and Variations and also the possibility of carrying out a long term project based on the ideas of this programme.

Plan the amount of time you would like the students to spend at the site. Also, how much is to be done, i.e., whether several or all the activities are to be carried out during the visit.

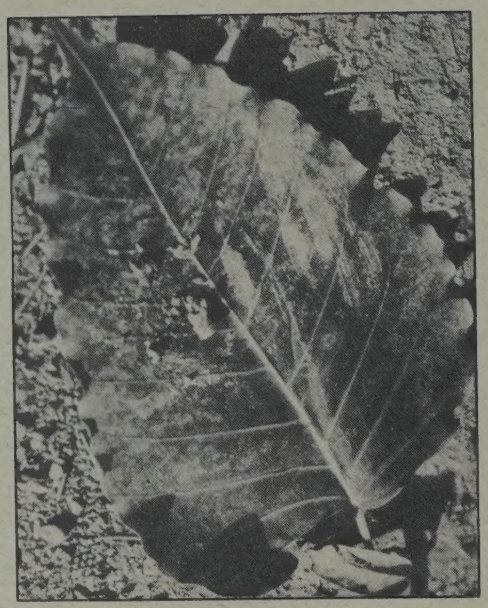
Before the students are taken to the location, list down and arrange for the materials likely to be needed. The following items are generally required. The quantity will depend on the number of students:

1. Blank sheets of paper (cyclostyling paper is ideal). At least two sheets will be required for each participant.
2. Crayons.
3. Measuring tape or 30 cm scale.
4. Cloth or gunny bag for object identification game.
5 Large handkerchiefs or cloth for blindfolding.
6. Thread or twine, 250 m long.
7. Blank cards 6 cm x 10 cm for labels for the games.
8. Worksheets as per samples attached. These may be cyclostyled in advance or students allowed to copy from the sample.
9. Magnifying glass or hand lens.

Session I

Before you begin, allow a few minutes for everyone to become familiar with the site.

Now assemble the group and broadly explain the outline and objectives of the programme. The outline should give the students an idea of the activities, games, and worksheets in the programme.



The students may, at your discretion, be divided into teams as described earlier. You may also conduct the sessions without forming teams.

At the end of the programme the students should be able to:

a) use all their senses of perception in a coordinated manner rather than relying heavily on sight alone,

b) achieve more awareness of the world of trees through measurement or estimation of their physical aspects,

c) describe a variety of living forms on and around a tree,

d) understand the inter-relationships among living things, with the tree as the foundation or main link,

e) think about man's impact, both positive and negative, on all life forms including man himself.

Feel and Find

Game 1

Collect (without plucking) different bits of bark, leaves, flowers, fruits and twigs of a tree from its surroundings.

Blindfold a student and let him/her feel one item for ten seconds (time allowed may be more or less, accordir g to the age group). After the item has been returned, remove the blindfold and ask the student to go and touch or point out the same item on or around the tree.

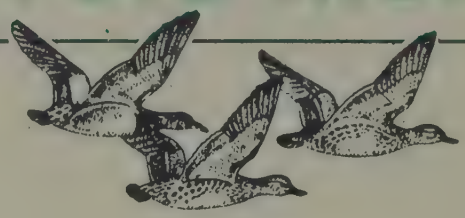
To add an element of fun, include a few similar items like the twigs and leaves of Gulmohar and Subabul trees or the leaves or Mango and Asopalav trees, etc.

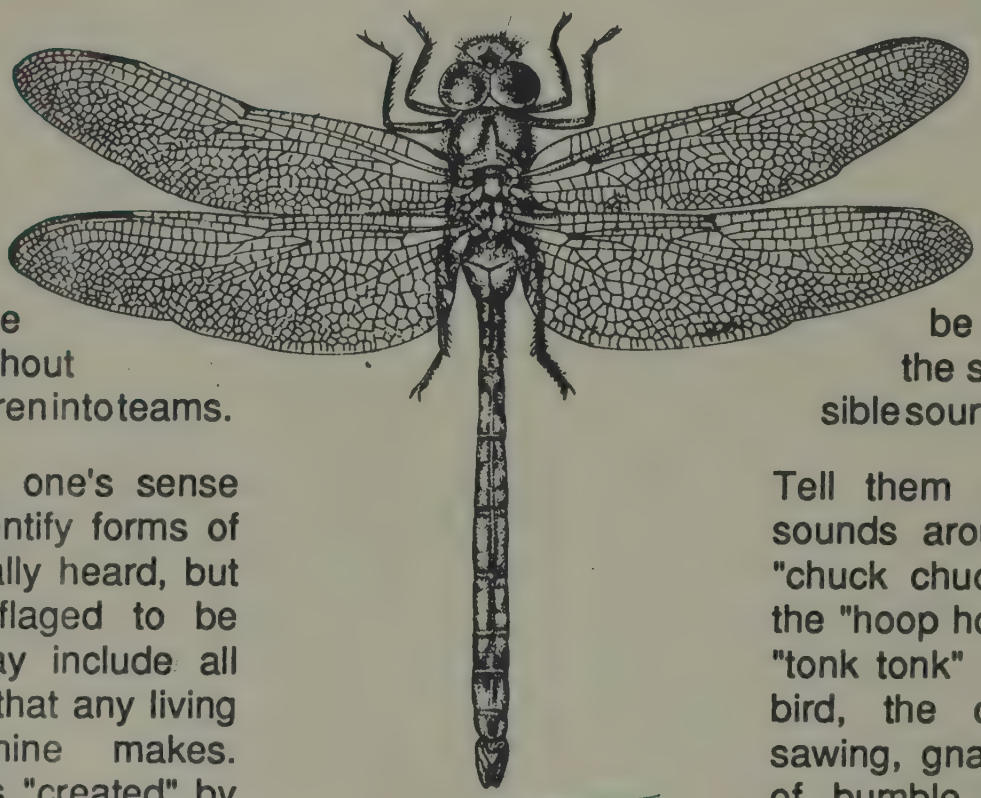
This game could even be played in the classroom. The student could pick out the item felt from the variety displayed in front of the group. One could add a piece of charcoal and a rock, a snake moult various dead insects and their moults.

In case a blindfold or large handkerchief is not available, a cloth bag made of thick and dark material can be used. Put the items to be identified in it while the groups face away. Ask the participant to put his/her hand inside the bag and identify the item without peeping in.

My Ears Told Me...

Game 2





This game may be played with or without grouping the children into teams.

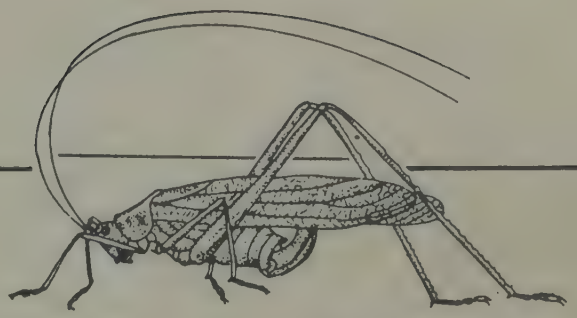
It involves using one's sense of hearing to identify forms of life that are usually heard, but too well camouflaged to be seen. These may include all types of sounds that any living thing or machine makes. However, sounds "created" by the students are to be excluded.

It should be explained that we can hear well only if we do not create any sound and that it is imperative to be quiet to hear different sounds. They should be encouraged to note the sounds and the possible sources of these sounds.

Tell them about the various sounds around them like the "chuck chuck" of tree lizards, the "hoop hoop" of langurs, the "tonk tonk" of the coppersmith bird, the chirping, scraping, sawing, gnashing and droning of bumble bees, the "pretty pretty" of tailor birds, rustling leaves, distant footfalls, or a dripping water tap.

Now ask the students to describe the sounds and say whether they are pleasant or not.

Worksheet 1



Complement to game 2

Name of investigator(s)with group name if any _____

_____

Standard _____

Date _____ Place _____ Time _____

Description of sound	Possible source/ location or who/ what made it	Pleasant or unpleasant characteristics
1. Kaa-kaa	crow	sharp and repetitive

Session II

In the previous session the students were introduced to the programme and their attention was drawn through games and the worksheet to our neglected senses of perception like touch and hearing.

This session is devoted to observing the physical aspects of trees through activities. Students can now be divided into teams in order to carry out the activities. Four activities should be carried out to add to their awareness of the environment. Encourage the teams to identify trees and plants in the area also.

Reproduce each activity on a separate card and give these cards to each team. Decide whether these four activities should all be done together or one after another, i.e., the second activity card being issued only after the first is returned.

Before distributing any activity card, however, the entire group must be made aware of outdoor ethics. These are:

a) being as quiet as possible so as not to disturb any living form on or around trees.

b) not damaging any aspect of nature by plucking flowers or leaves, catching insects, disturbing birds, or throwing stones at fruits on trees branches.

c) leaving the place as found, especially never leaving behind litter like wrappers of sweets, chewing gum, scraps of food, plastic, etc.

Now brief the children on the types of activities to be carried out and give them the cards.

The Height of It

Activity 1

SIKSHA MITRA
(Learning Centre)
Supported by : Swanirbhar

From the group of trees that you can see around you, find the tallest tree. Estimate the height of this tree.

There are many ways of doing this. One of them is suggested here:

1. Walk away from the tree so that the full height of the tree is seen.

2. Take a pencil, scale or a straight stick in your hand and hold it with your arm fully outstretched.

3. Now hold the stick so that the upper end appears to be in line with the top of the tree.

4. Slide your thumb downwards on the stick till it is in line with where the tree meets the ground.

5. Turn the stick through a right angle, i.e., from a vertical to a horizontal position on either the left or the right side.

6. Keep the thumb-end of the stick in line with the base of tree. Ask a friend to move slowly away from the tree moving in the same direction as the stick and parallel to it. When your friend appears to reach the end of the stick tell him/her to stop. Ask your friend to make a mark on the ground on this spot.

7. The distance between this mark and the tree gives an estimate of the height of the tree.

Thick and Thin

Activity 2

From the group of trees that you can see around you, find

a) the tree with the thickest trunk.

b) the tree with the thinnest or the most slender truck.

There are many ways of measuring the girth or circumference of tree-trunks:

a) By using a piece of string

b) By holding hands with your friends around the tree trunk

c) By using as a measure the span of your hand from thumb end to the little finger end.

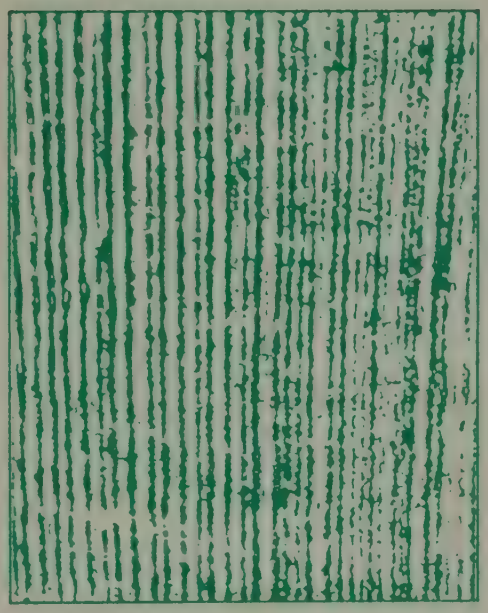
Note to teachers

You could use your discretion to teach standard and non-standard ways of measuring. Each team may be asked to measure the tree in a different way and compare results with others.

Tree Autograph

Activity 3

Neem



Bottle Palm

Almond

From among the group of trees that you can see around you, find:

a) the tree with the smoothest bark.

b) the tree with the roughest bark.

Can you identify these trees by name? Take impressions of the different barks on paper. This is the tree's autograph.

Bottle Palm

To take autographs of trees, hold a blank sheet of paper steadily against the bark. Rub a crayon over the sheet to get the impression of the bark. The ridges will be coloured while the cracks in the bark will remain blank. If possible, match the colour of the bark with the crayons you use or describe the colour alongside the autograph. Try this with different kinds of trees and compare.

Leaf Litter

Activity 4

1.. From among the fallen leaves around the tree, how many different types of leaves can you collect under that one tree alone ? (Do not pluck leaves from any plant.)

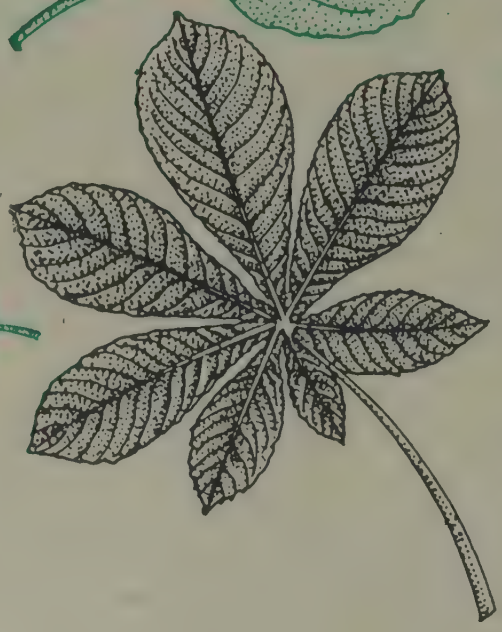
2. Are all the leaves you collected from the same tree? If not, which other trees could they have come from?

3. Which is the most common leaf present under the tree you have selected?

4. From your collection you could make a display of

a) the biggest leaf
b) the smallest leaf
c) leaves with holes
d) leaves with bumps, etc.

To find out the commonest type of leaf under a tree, one could use any one of the following methods:



a) First estimate by sight and then actually count in a small area. This would give a rough idea.

b) Take a few (say 5-8) sample counts from different places under the tree and estimate for the area covered by that tree.

Note to teachers

Ask the students how and why different leaves happened to be under the tree. Was it the wind that brought them there? Was some animal responsible?

For a summary of the activities, each group may be asked to identify the tree(s) they have observed or taken bark-prints from.

Session III

In this session, the teams concentrate on listing the names of the living things observed on and around a tree. In order to do this, each team has to select a particular tree on which a variety of life could be found.

The following worksheet is designed to assist them in recording their observations systematically. Details on how to use the worksheet are listed below.

a) For the purpose of these activities, "living things" may be classified as plants, small animals (like earthworms, slugs, spiders, scorpions, insects, etc.), birds and large animals (like lizards, snakes, squirrels, monkeys, etc.).

b) "Seen where" should give location, e.g., in the top, middle or lower part of the tree; among leaves, branches, flowers, trunk; in the leaf litter; on dead branches in the shade/sunlight

c) Size" is very easy to record if associated with known objects or living things, e.g., a dove is smaller than a pigeon, which in turn is smaller than a crow. For insects, the size of a pin's length or half its length, a nib (smaller or larger than it) can be used as a standard. The langur could be chest high for many students. Encourage students to express the measurements in metric terms.

d) " Outstanding characteristics" include the first aspect that strikes one about the particular living thing, e.g., the long tail of the langur or peacock, the crest of the hoopoe, the long legs of cranes, the bright colours (name these colours) of certain birds (e.g., peacocks), the hard covering of the beetle, the scales and tail of the lizard, the speed of dragonflies, the fat bodies of bumblebees, etc.

e) "Doing what" is not relevant to the plant category. It includes a variety of animal activities like sleeping, feeding, grooming itself/others, stalking, hiding, hunting, resting, nesting, feeding young ones, etc.

f) "Comments and sketches" should have rough sketches to help quick identification. Everyone may not be an artist and our purpose here is only to get an idea of the shape etc., of what is seen.

At the end of this activity, the team may exchange information and try to identify the common factor which unites or brings all these living things here. The inter-relationships are usually either symbiotic or of competition for food and space.

Comments on how the living thing is related to the tree as well as to other living things on and around the tree should be included. For example, bees are pollinators and have a symbiotic relation with the tree since they get nectar from the flowers; or, the praying mantis uses the tree as an indirect source of food—attacking insects that visit the tree; others use the tree for shelter or as a convenient look-out point.

Worksheet 2

Name of investigator(s) with group name if any

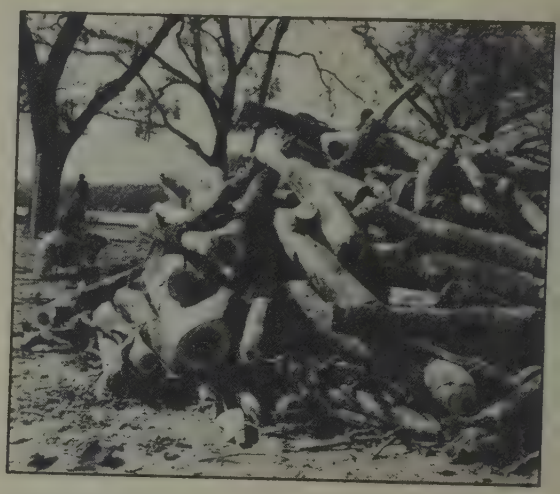
_____

Standard _____

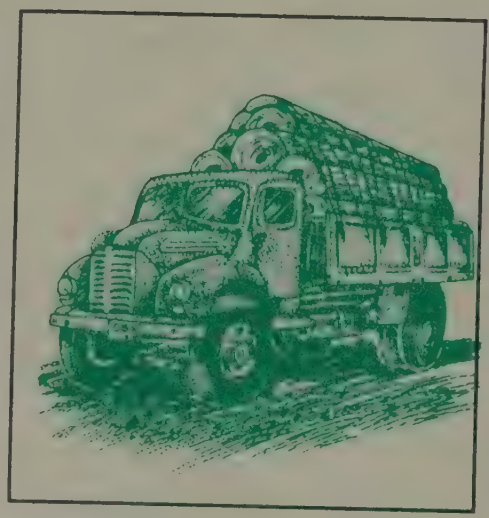
Date _____ Place _____ Time _____

Name of living thing	Seen where	Size	Outstanding characteristics	Doing what	Comments and sketches
Plants					
1.					
2.					
3.					
Small Animals					
1.					
2.					
3.					
Birds					
1.					
2.					
3.					
Large Animals					
1.					
2.					
3.					
4.					

Session IV



This final session is aimed at observing man's impact on the environment, on trees of the area in general and on the particular tree selected.



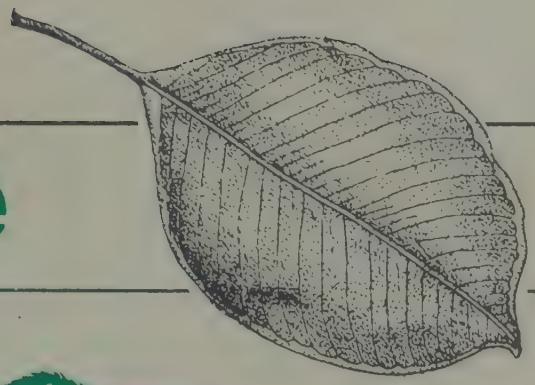
The teams are asked to observe and list within 10 minutes what activities of man are affecting this area. These would include positive activities like planting trees, leaving nature undisturbed to take its own course, protecting the place, etc.; or negative ones, like cutting trees or branches, plucking leaves, flowers or fruits, harming wildlife either by killing directly or indirectly through pesticides; damaging trees by carving initials or peeling bark, etc.

The teacher should highlight the variety of life forms that are dependent on a tree, their independent and interdependent functioning, man's impact on these and how to overcome the problems of dwindling natural resources so essential for the continued survival of all life of which man is only a part.

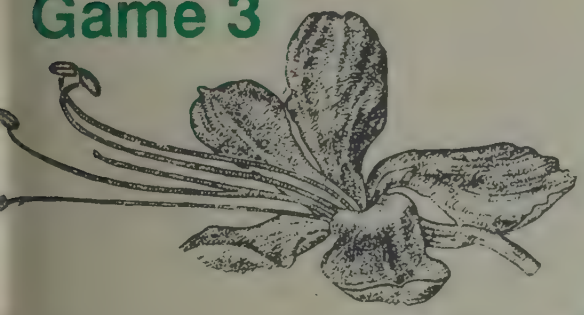
Exchange of information should lead to a discussion through which the main concepts can be outlined and the whole programme consolidated.

An effective way of demonstrating the interrelationships is through the game described in the following page. To get a better visual effect of the concept being communicated, this game should be played with at least 20 students.

Web of Life

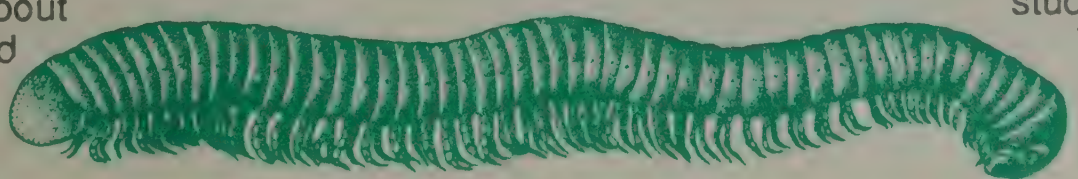


Game 3



This game may preferably be played after the students have played the games "Who Am I" (pg. 26) and "The Poet in the Child". (pg. 27). The whole group sits in a circle. Each student identifies himself/herself with one aspect of nature, e.g., rock, sun, soil, air, water, grass, tree, leaf, flower, bird, cow, butterfly, etc. See the list of names for this game. The list is arranged in order of priority up to the first 24 names. Distribute to each student a badge or card-label with his assumed identity written on it clearly enough for everyone to see. Make sure to include and distribute cards depicting the four main elements of nature, Sun, Soil, Air and Water. Take a ball of string about 250 m long and give it to the "Sun".

It is appropriate to begin with the Sun because all life is made possible by it. Let the "Sun" wind one end of the string on his finger and throw the ball to any aspect of nature he feels related to him. For example, the Sun gives energy to plants or trees. Let the student state the reason why he/she feels related to this element. The "Tree" then winds the string once or twice around his finger after ensuring that it is not loose between the Sun and him. He then passes it to another aspect he feels related to, e.g., Fruit. "Fruit" can throw the string to "Parrot" and the line of relationships continues as the string unwinds and begins to form a pattern which the students hold together The ball of string is thus completely used.



Ask the students to see the web-like effect of the string. Then ask them to raise the web chest high. Let them hold it tightly so that if the web is pressed down it does not sag and touch the ground. Ask the students to note this.

Ask the students what would happen if some of these elements did not exist. Let the student representing these elements drop the string. Notice

the visual effect. More elements may be dropped to dramatize the effect. Now press the web down. It would probably touch the ground because it is loose.

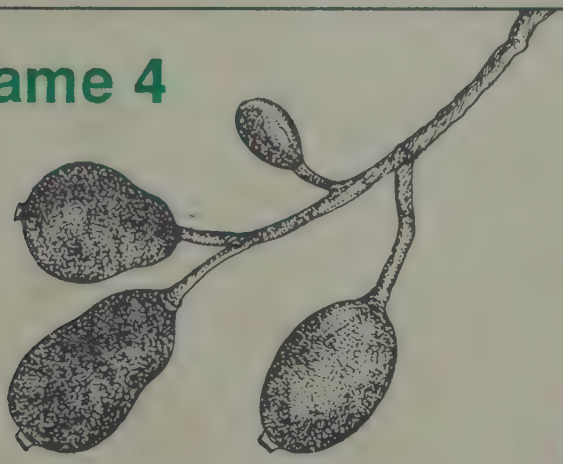
Ask the students what would happen if the Sun or the other three major elements of nature did not exist. Conclude the game by explaining to the students how inter-relationships exist and why they are important.

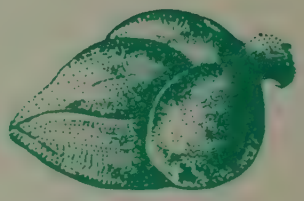
Extensions/Variations

Here are a few ideas to bring variety into your sessions. You may incorporate any or all of these extension and variation ideas in your programme. You could then have a choice to change, adapt and refine the sessions at your convenience.

Go and Touch

Game 4

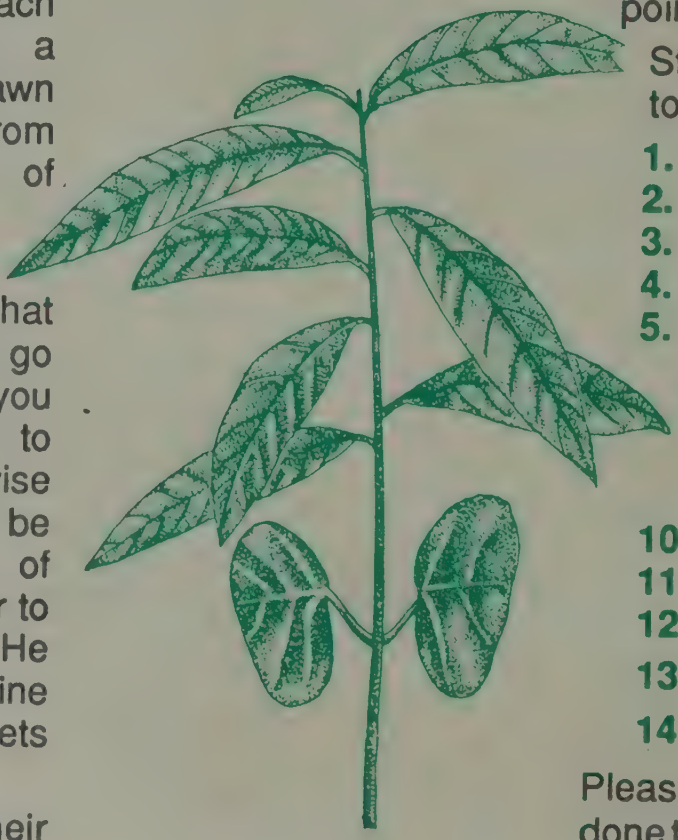




This is played as a team game with an equal number of members in each team. Each team is assembled in a separate row. A line is drawn in front of each row from where the first member of each team starts.

As soon as the teams are ready, explain to them that only the first member has to go and touch the object that you call out. No member is to speak, guide or advise another. Points may be deducted for any breach of rules. The first team member to reach back gets a point. He then joins the end of the line and the next member now gets a chance.

One good way to sharpen their observation is to ask for something to be touched and point out in the wrong direction.



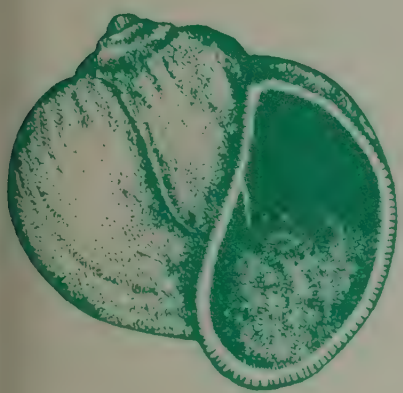
Students may be asked to touch :

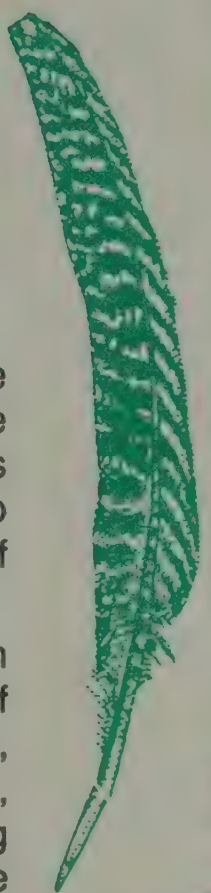
1. A living thing
2. Something green
3. Something brown
4. A mango tree
5. A neem tree
6. Grass
7. Something wet
8. A fruit
9. A flower (red, etc.)
10. A brown leaf
11. A compound leaf
12. A feather
13. A smooth bark
14. A fallen twig or branch

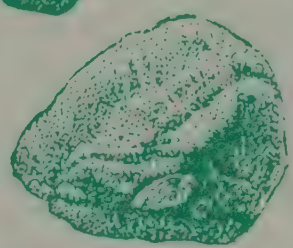
Please ensure that no damage is done to the surroundings.

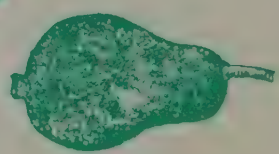
Memory Game

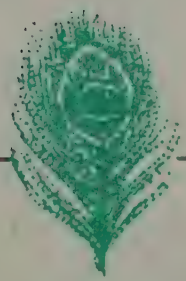
Game 5

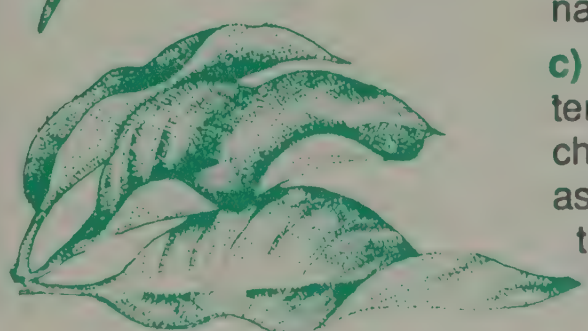












This game increases the power of concentration of the students while observing as objectively as possible. It also encourages the retention of observations made.

Collect about 30 items from nature like different types of leaves, branches, soil, stones, shells, snake moults, fruits, etc., without harming living things. Put these on a large tray. Cover it with a cloth.

Ask the group to assemble around the tray. Remove the cloth for 20-30 seconds. The time can vary depending on the age group of students

Then cover the tray again. Ask the individuals to write down all the items they have seen.

Variation

Add ten or so man-made items like a rag, needle, button, watch, pencil, slipper, ring, etc., and ask the children to :

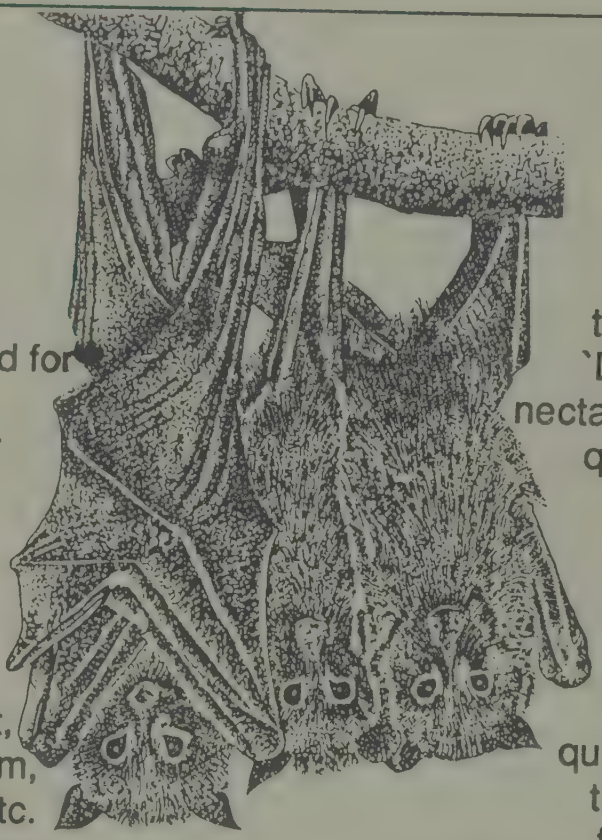
a) List only the natural items

b) Make separate lists of natural and man-made items.

c) Describe each object in terms of size, outstanding characteristics, main colour, associated colours, shape, texture, where it is found, and any other interesting aspect.

Who Am I ?

Game 6



For encouraging the use of deductive logic in identifying various aspects of nature and for gaining an insight into the characteristics of a particular aspect of nature this game may be played.

Divide the class into two teams. A relevant name tag is fixed on the back of each participant. For example, fruit, seed, flower, mango, neem, sparrow, spider, egg, nest, etc. The participant is not told what label she bears. A member of the other team reads the name silently.

The first participant asks relevant questions regarding his identity. The partner knowing the name, answers only `yes' or `no'. The first participant has three guesses , within say two minutes (time may be varied according to age) to answer correctly. Questions such as `Am I a living thing/non-living thing ? `Do I live on a branch?', `Do I fly ?' 'Do I eat fruit/insects/ nectar ?', etc., are allowed. Leading questions like `Am I a branch ?' (if a person is labelled `branch'), are not allowed.

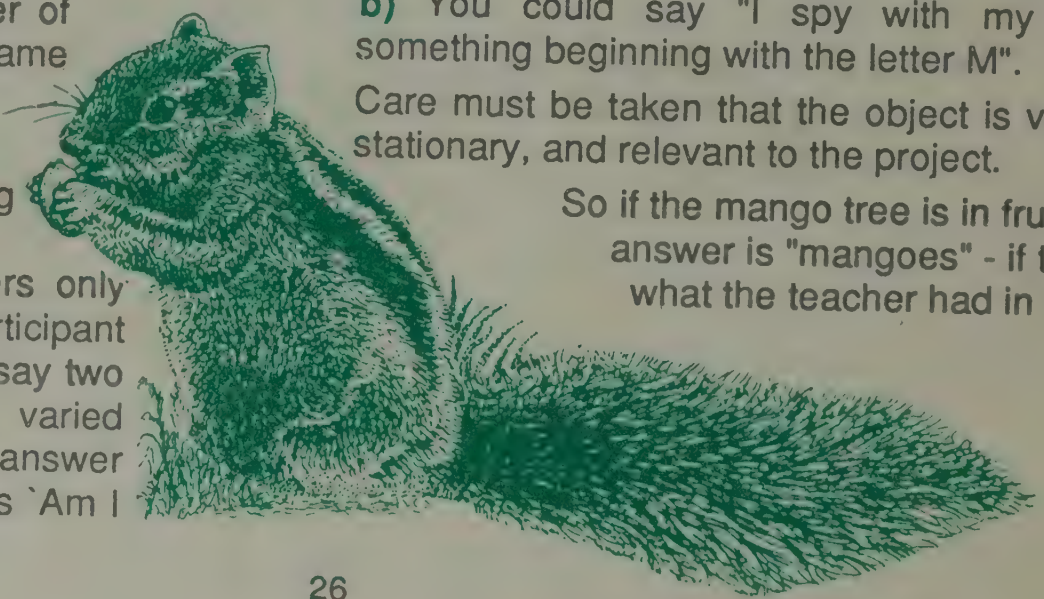
Variations

a) Instead of time limit, you could limit the number of questions - say first, second and third guesses to be made after five, ten and fifteen questions.

b) You could say "I spy with my eyes something beginning with the letter M".

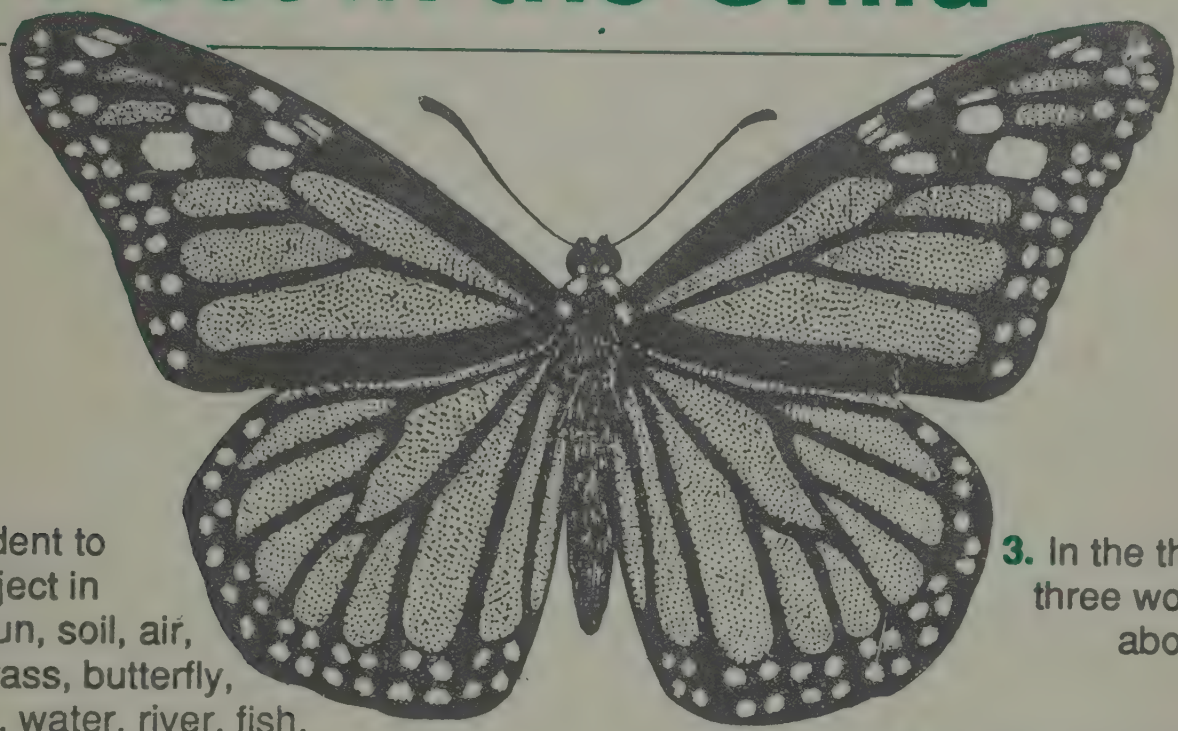
Care must be taken that the object is visible, stationary, and relevant to the project.

So if the mango tree is in fruit, the answer is "mangoes" - if that is what the teacher had in mind.



The Poet in the Child

Game 7



Ask each student to choose an object in nature (like Sun, soil, air, cloud, tree, grass, butterfly, sparrow, tiger, water, river, fish, etc.) which he feels reflects his own personality or qualities. Students may then be asked to speak on how the chosen object reflects their personality.

Let them then take up their papers and pencils and:

1. In the first line write the name of the object (subject/ noun).

2. In the second line write two words describing the qualities of the object (adjectives).

3. In the third line write three words of action about the object (verbs).

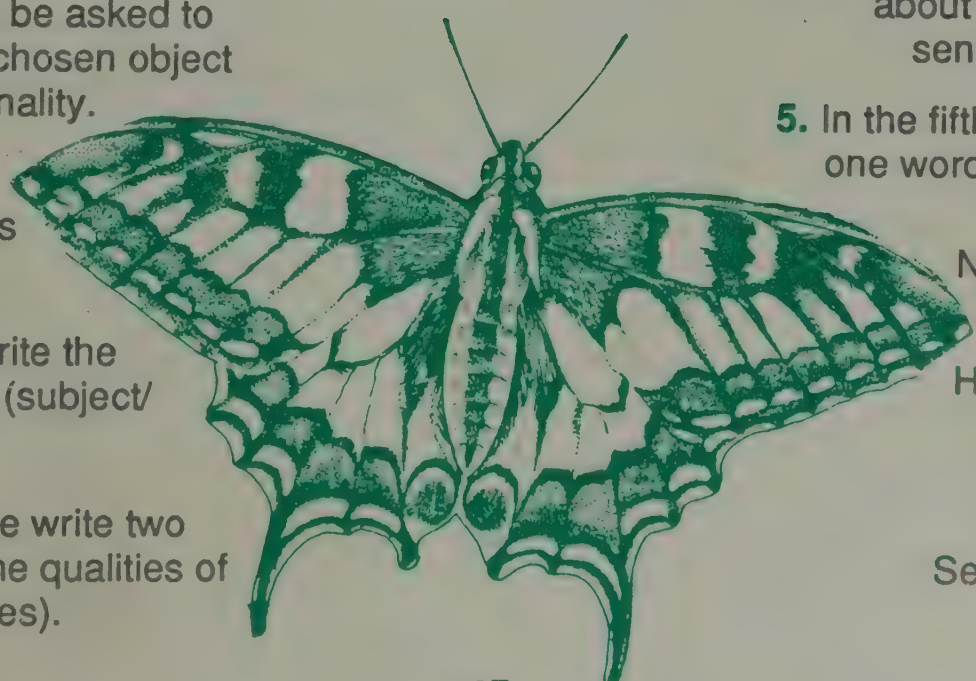
4. In the fourth line write four words describing how they feel about the object (phrase, sentence, expression).

5. In the fifth and last line write one word to replace the title (synonym).

Now let them read it like a poem.

Here is an example-

Butterfly
Delicate graceful
Flutters finds sips
Seems weak but isn't
Beauty

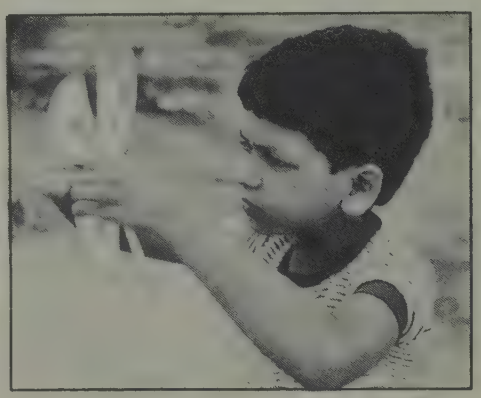


More Activities

Apart from the four activities students may also be asked to :

1. Find animals among the fallen and rotting leaves. Animals could be classified as those that hop, wriggle or do not move at all.

2. Find out how many trees and how many kinds of trees they can list on the way to school within 1 km or 1200 steps from the school gate.



3. Estimate the height of a tree. Ask a friend to stand straight against the trunk. Take a pencil or a straight stick in your hand. Walk from the tree so that the top is clearly seen. Stretching your arm fully, measure your friend on the pencil or stick. Now measure how many times this pencil height goes into the whole tree. Remember to keep your arm fully stretched. Finally multiply the number of times by your friend's height to get the height of the tree. E.g., if your friend is 1.50 m tall, and his height goes six times into the tree then the tree is 1.50 m x 6 = 9 m tall.

4. Using Pythagoras theorem, students could measure the shadow of a tree, particularly towards evening, and measure the shadow of a stick or ruler and work out the area covered by a tree (by its shadow). Also the area that is shaded at different times of the day.

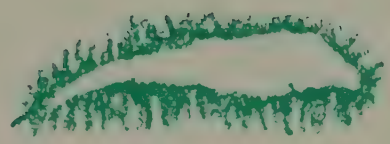
5. How many different birds visit the tree ? When in the day and why ?

6. How many other kinds of plants grow under the tree and on it ? Describe them and if possible, name them.

7. Sketch the shape of the tree. It is easy to sketch the shapes of trees if these are associated with common objects like a pole, a large spear tip, a lollipop, a broken lollipop, an umbrella, etc.

8. List the uses of the tree by animals while it is standing and also after it has been cut.

Uses of a Tree



When Alive :

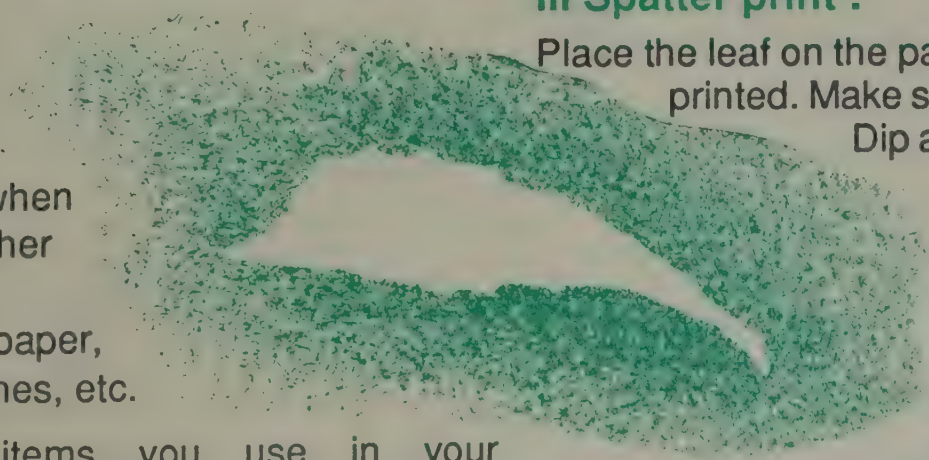
As food - for man, other plants, animals
As shelter - for man, camouflage for birds, insects, etc.
As habitat - for other plants, e.g., epiphytes
As a look-out point - for birds of prey
As part of the water cycle
As a trapper of Sun's energy
As a holder of soil.
As a source of humus.

When Dead (Rotting) :

As shelter - for insects, etc.
As food - for beetles, termites, decomposers
As habitat - for various insects, lizards, etc.

When Cut :

For making various objects from matchsticks to ships
For construction
As implements
As fuel
As items of use when combined with other materials or processed, e.g., paper, matchsticks, clothes, etc.

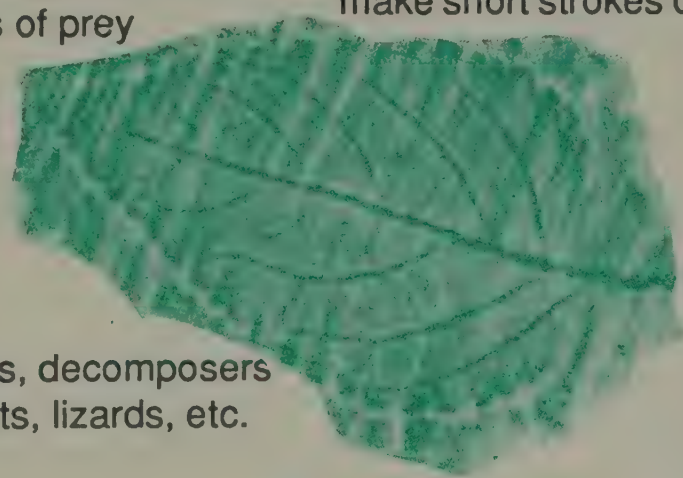


9. List the items you use in your house/school which are made from parts of a tree. Can any of these be replaced with something else which is easily available ?

10. Take leaf impressions or autographs using different methods.

I. Silhouette print :

Place a leaf on a sheet of paper. Using a crayon make short strokes outwards from the edges of the leaf holding the leaf firmly in place.



II. Crayon print :

Place the leaf on a smooth solid surface with the veined side up. Cover the leaf with the veined side up. Cover the leaf with paper on which the print is to be made. Rub a crayon on the paper.

III Spatter print :

Place the leaf on the paper on which it is to be printed. Make sure that the leaf lies flat. Dip an old tooth brush in thin water colour. Shake off any surplus water colour. Holding the brush above the paper scrape the bristles and spray the paper around the margins of the leaf. Label the print with relevant details.

Alternative Worksheet 1

Developed by Mrs. Jyotiben Trivedi, a teacher who tried out the programme with her students.

1. How many trees can you name ?

2. Of the trees that you have named, how many have you seen ?

3. From the trees around you, how many can you name ?

4. Take the leaves of any three trees around you. Do not pluck the leaves but pick the ones that have fallen on the ground.

   Mention the similarities and differences between these leaves.

   Similarities :

   1. _____
   2. _____
   3. _____
   4. _____

   Differences :

   1. _____
   2. _____
   3. _____
   4. _____

5. What are the differences in the trunks of these three trees ? _____

6. From the trees around you:
   Which tree has the thickest trunk ?

   Which tree has the thinnest trunk ?

7. How will you measure the thickness of the tree trunk ? _____

8. From the trees around you:
   Which tree has the smoothest bark ?

   Which tree has the roughest bark ?

9. With the help of the instructions (Activity No. 3) take bark prints.
10. With the help of the instructions, estimate the height of the tree.
11. Draw a picture of the tree.

Alternative Worksheet 2

Developed by Mrs. Jyotiben Trivedi.

1. Select any one tree.
2. Describe the leaves of this tree.

   _____

   _____

3. Are the branches of the tree spread out and full of leaves ?

   _____

   _____

4. What is the colour of its trunk and branches ?

   _____

   _____

5. Can you see any fruits on the tree ? Name them.

   _____

   _____

6. Describe the trunk of the tree.

   _____

   _____

7. Measure the thickness of the tree trunk.

   _____

   _____

8. Can you see any insect on the ground under the tree ? Name or describe them.

   _____

   _____

   _____

9. Can you see any insects on the tree trunk? Name or describe them.

   _____

   _____

   _____

10. Can you see any birds or animals on the tree ? Name them.

    _____

    _____

    _____

11. Can you describe one bird that you see on the tree ?

    Colour _____

    Size _____

    Sound _____

    Tail _____

    How it flies _____

12. Can you see any bird-nest on the tree ? _____

13. Which bird do you think made the nest ?

    _____

14 Estimate the height of the tree.

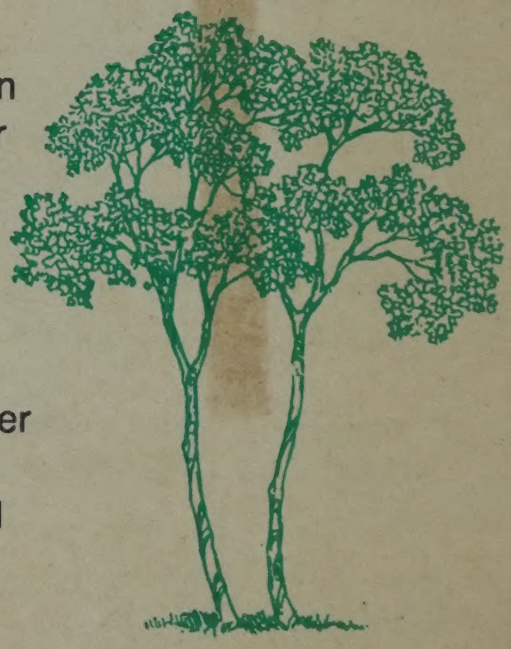
    _____

15. Take bark prints.
16. Use your imagination and find out what you can see in the bark prints.
17. Draw a picture of the tree.

List of Names for Web of Life

1. Sun
2. Air
3. Water
4. Soil
5. Tree
6. Fruit
7. Parrot
8. Algae
9. Fish
10. Eagle
11. Turtle
12. Insect
13. Frog
14. Mosquito
15. Lizard
16. Leaf
17. Flower
18. Butterfly
19. Ant
20. Student
21. Grass
22. Dead leaf
23. Earthworm

24. Root
25. Shrub
26. Seed
27. Fungus
28. Dragonfly
29. Monkey
30. Spider
31. Snake
32. Mongoose
33. Kingfisher
34. Washerman
35. Woodcutter
36. Buffalo
37. Honey
38. Honeybee
39. Squirrel
40. Moss
41. Grasshopper
42. Plastic bag
43. Dead wood
44. Paper
45. Crocodile



Shikshamitra
EDUCATION RESOURCE CENTRE
62B, Alipore Road, Kolkata -700027
Ph: 2479 9271

RETURN DATE SLIP

DUE DATE	DUE DATE	DUE DATE